



A.D. 1847 N^o 11,525.

S P E C I F I C A T I O N

OF

JOHN PLATT.

FURNACES OF STEAM BOILERS, &c.

L O N D O N :

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Furnaces of Steam Boilers, &c.

PLATT'S SPECIFICATION.

TO ALL TO WHOM THESE PRESENTS SHALL COME, I, JOHN PLATT, of Oldham, in the County of Lancaster, Machine Maker, send greeting.

WHEREAS Her present most Excellent Majesty Queen Victoria, by Her
5 Letters Patent under the Great Seal of Great Britain, bearing date at Westminster, the Eleventh day of January, in the tenth year of Her reign, and in the year of our Lord One thousand eight hundred and forty-seven, did, for Herself, Her heirs, give and grant unto me, the said John Platt, Her especial licence, full power, sole privilege and authority, that I, the said John
10 Platt, my executors, administrators, and assigns, and such others as I, the said John Platt, my executors, administrators, and assigns, should at any time agree with, and no others, from time to time and at all times during the term of years therein expressed, should and lawfully might make, use, exercise, and vend, within England, and Wales, and the Town of Berwick upon Tweed,
15 my Invention of "CERTAIN IMPROVEMENTS IN THE METHOD OF CONSUMING SMOKE AND ECONOMIZING FUEL;" in which said Letters Patent is contained a proviso that I, the said John Platt, shall cause a particular description of the nature of my said Invention, and in what manner the same is to be performed, to be enrolled in Her Majesty's High Court of Chancery within six calendar months
20 next and immediately after the date of the said in part recited Letters Patent, as in and by the same, reference being thereunto had, will more fully and at large appear.

Platt's Improvements in the Method of Consuming Smoke & Economizing Fuel.

NOW KNOW YE, that in compliance with the said proviso, I, the said John Platt, do declare that the nature of my Invention, and the manner in which the same is to be performed, is particularly described and ascertained in and by the Drawings hereto annexed and the following explanation thereof (that is to say) :—

My Improvements in the method of consuming smoke and economizing fuel are applicable principally to the furnaces of steam boilers, and consist,—

Firstly, in the application of a valve or damper to admit air into the main flue, between the furnace and the chimney, at proper intervals, so as to stop the great draft through the furnace, which damper is opened or closed by the action of the steam gauge in connection with the boiler.

Secondly, in admitting a current of air into the ash-pit when necessary, which is also regulated by the steam gauge aforesaid.

Thirdly, in causing the said steam gauge to stop or start the feeding apparatus when required.

And fourthly, in so forming and arranging the fire bars as always to have a thin red fire at that end of the furnace nearest the bridge, for the purpose of consuming the smoke as it passes over it from the fresh fuel.

In the Drawing accompanying these Presents, I have shewn my improvements as applied to the furnace of an ordinary tubular steam boiler, similar letters of reference indicating corresponding parts of mechanism in all the Figures.

In Sheet 1, Figure 1 represents a side elevation of the apparatus, and Figure 2, a front view of the same, being drawn to a scale of about three inches to a foot. *a, a*, is the main framing supporting the casing *b, b*, of the steam gauge, the inner cylinder *c, c*, being suspended by the pressure of the steam, and counterbalanced by the lever and weight *d, d*. The space between the two cylinders being packed with water or other suitable fluid, steam is admitted from that boiler to the interior of the inner cylinder *c, c*, by the pipe *e*, and the cylinder is so balanced, that any variation in the pressure of the steam will cause the cylinder *c* to rise or fall, and by means of the upright rod *f*, actuate the bent lever *g*, and thus slightly alter the position of the excentric rod *h*; the excentric rim or clip *i, i**, is so formed (see sectional Figure 3) that only one edge at a time can be in gear with the excentric *k*, which is caused to revolve by means of the worm wheel *l* being actuated by the worm *m* upon the upright shaft *n*, which shaft is driven by a band from the feeding apparatus passing around a pulley at its upper end, or in any other convenient manner. The excentric rod *h* is suspended from the ceiling by a chain or cord *h**, and being connected to the shaft *o* by the lever *p*, rod *q*, and lever *r*, as the excentric

FIG. 1.

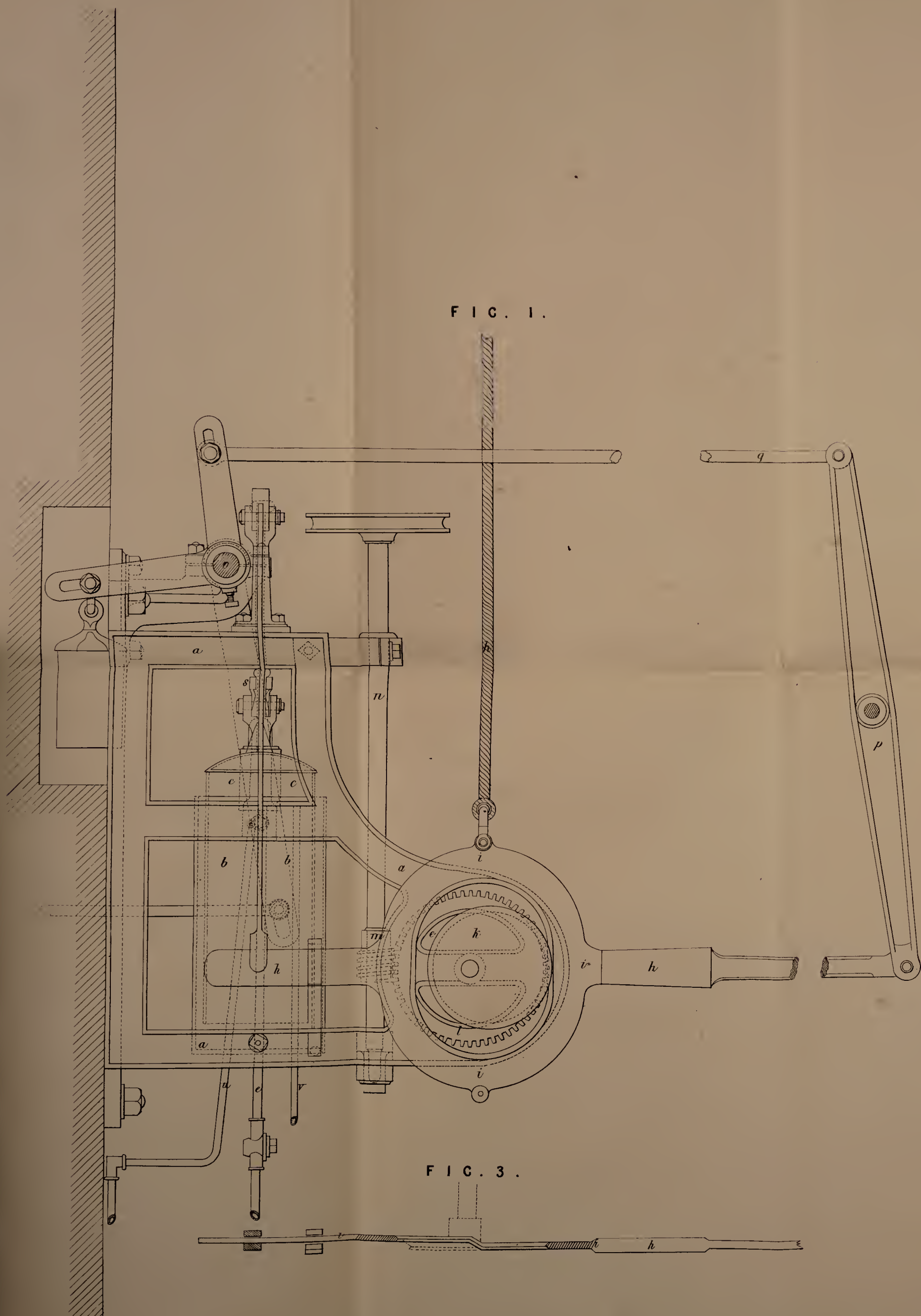
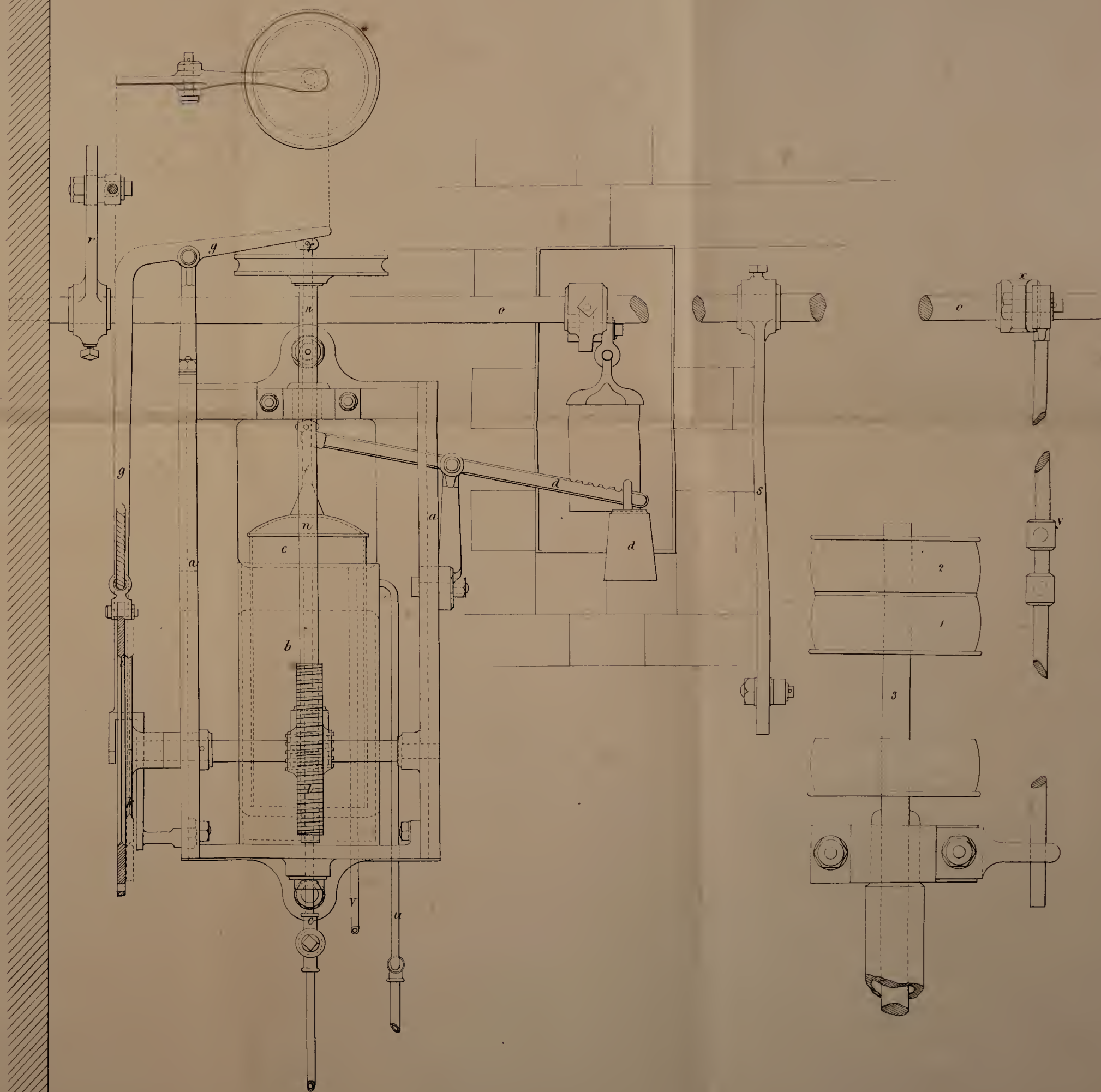
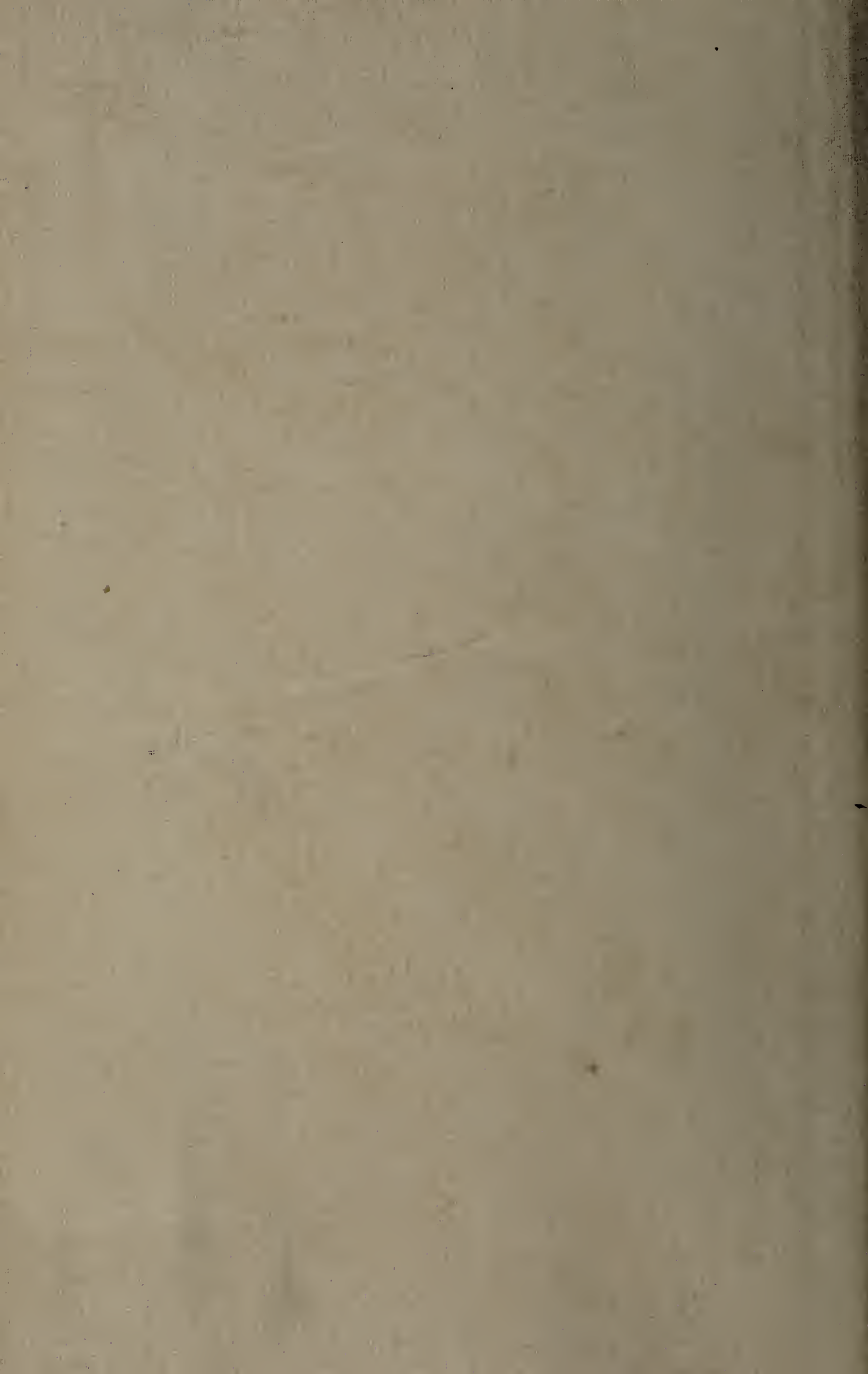


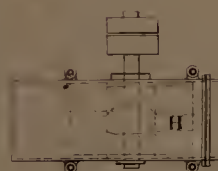
FIG. 3.



FIG. 2.







Platt's Improvements in the Method of Consuming Smoke & Economizing Fuel.

k revolves, it will cause the shaft *o* to perform part of a revolution, either in one direction or the other (according to which side of the rim *i*, *i*, is in gear with the excentric), thus vibrating the lever *s*, which being connected by the rod *t* to the valve in the main flue, will open or close that valve as required.

5 The connection of the apparatus with the boiler, furnace, and flues is shewn in Sheet 2, Figure 1 being a longitudinal section, and Figure 2 a plan view of a tubular boiler and furnace, with my apparatus attached thereto, and drawn to a scale of about half an inch to a foot. A is the brickwork supporting the boiler B, and C is the main flue leading to the chimney. This flue communi-

10 cates to the atmosphere by the upright flue D, which is opened or closed by the valve or damper E, which is connected by the rods and levers *t* to the screw *s*; *u* is an overflow pipe to convey off the superfluous water from the steam gauge, and *v* is a pipe for blowing the steam through to clear the passages. It will be seen that when the inner cylinder *c* of the steam gauge

15 rises (owing to the increased pressure of the steam), the lever *g* will throw the side *i**, of the excentric clip or rim into gear with the excentric *k*, and thus, by means of the rods and levers aforesaid, open the valve E, and allow the draft of the chimney to draw the air down the flue D, and consequently diminish the draft through the furnace. When the steam is too low, the valve

20 E is closed by the action of the steam gauge, and the second part of my Invention comes into operation. The ash-pit F is closed, and has a flue G connecting it with the fan or blower H, or with any convenient apparatus for causing a current of air. The flue *g* is furnished with a valve I, which is opened or closed by the vibration of the shaft *o* being connected to it by the lever *w* and rod *k*,

25 or the rod K may be made to stop the fan H, instead of closing a valve in the flue G. The vibration of the shaft *o*, consequent upon the rising and falling of the cylinder *c* of the steam gauge, also throws the strap which drives the feeding apparatus on to the fast or loose pulley, (so as to stop and start the feeding at proper intervals,) by means of the lever *x* upon the shaft *o*, which carries the

30 strap fork or guide *y*; *z* is the driving shaft of the feeding apparatus, and 1, 2, are the fast and loose pulleys. The peculiar form and arrangement of the fire bars is seen at Figure 1, Sheet 2. L, M, are the fire bars; the end, M, being raised, so that there is always a thin red fire at that end which will consume the smoke that passes over it from the fresh fuel.

35 Having now described the nature and object of my said improvements in the method of consuming smoke and economizing fuel, together with the manner of carrying the same into practical operation, I wish it to be understood that I claim as my Invention,—

Firstly, the method of causing the increased pressure of the steam to admit

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air into the main flue between the furnace and the chimney, thereby in a great measure stopping the draft of the furnace.

Secondly, I claim the method of admitting a current of air into the ash-pit, when necessary, for the action of the steam gauge.

Thirdly, I claim the method of causing the said steam gauge to stop and 5 start the fuel feeding apparatus when necessary.

And, fourthly, I claim the peculiar form or construction of the fire bars, as shewn in the Drawings annexed and above described, for the purposes of consuming smoke and economizing fuel.

In witness whereof, I, the said John Platt, have hereunto set my hand 10 and seal, this Ninth day of July, One thousand eight hundred and forty-seven.

JOHN (L.S.) PLATT.

AND BE IT REMEMBERED, that on the same Ninth day of July, in the year above mentioned, the aforesaid John Platt came before our Lady the 15 Queen in Her Chancery, and acknowledged the Specification aforesaid, and all and everything therein contained, in form above written. And also the Specification aforesaid was stamped according to the tenor of the Statute in that case made and provided.

Inrolled the Tenth day of July, in the year above written.

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